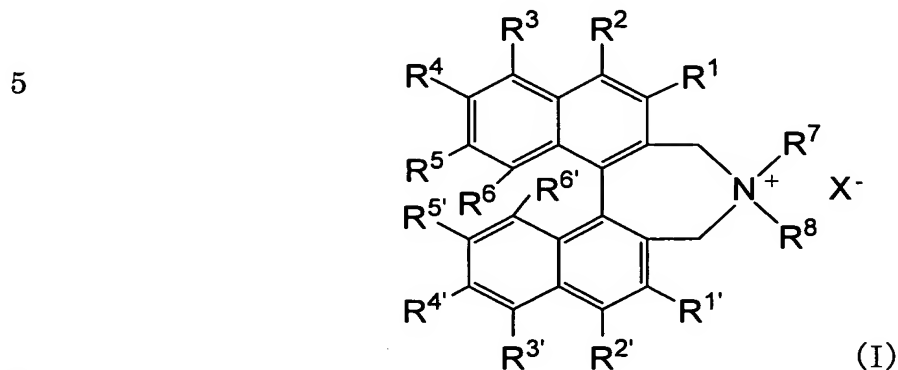


CLAIMS

1. A compound represented by the following formula (I) below:



wherein R^1 , $R^{1'}$, R^2 , $R^{2'}$, R^3 , $R^{3'}$, R^4 , $R^{4'}$, R^5 , $R^{5'}$, R^6 , and $R^{6'}$ are groups independently selected from the group consisting of:

- (i) a hydrogen atom;
- (ii) $-NR^{20}R^{21}$ (where R^{20} and R^{21} are each independently a

15 hydrogen atom or a C_1 to C_4 alkyl group);
- (iii) a cyano group;
- (iv) a nitro group;
- (v) a carbamoyl group;
- (vi) an N -(C_1 to C_4 alkyl)carbamoyl group;
- (vii) an N,N -di(C_1 to C_4 alkyl)carbamoyl group;
- (viii) $-NHCOR^9$ (where R^9 is a C_1 to C_4 alkyl group that may be

20 branched);
- (ix) a C_1 to C_6 alkyl group that may be branched or form a cyclic group;
- (x) a C_2 to C_6 alkenyl group that may be branched or form a cyclic

25 group;
- (xi) a C_2 to C_6 alkynyl group that may be branched or form a

cyclic group;

(xii) an aralkyl group, wherein the aryl moiety of the aralkyl group may be substituted with at least one group selected from the group consisting of:

5 a C₁ to C₄ alkyl group that may be branched,

a C₁to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁to C₄ alkyl group), a nitro
10 group, a carbamoyl group, an N-(C₁to C₄ alkyl)carbamoyl group, an N,N-di(C₁to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
15 atom or a C₁to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁to C₄ alkyl)carbamoyl group,

an N,N-di(C₁to C₄ alkyl)carbamoyl group,

20 -NHCOR⁹ (where R⁹ is a C₁to C₄ alkyl group that may be branched), and

a halogen atom;

(xiii) a heteroaralkyl group having a heteroaryl moiety, wherein the heteroaryl moiety may be substituted with at least one group
25 selected from the group consisting of:

a C₁to C₄ alkyl group that may be branched,

a C₁to C₅ alkoxy group that may be branched,

- an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- a halogen atom;
- (xiv) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
- a C₁ to C₅ alkoxy group that may be branched,
- an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- a cyano group,

- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- a carbamoyl group,
- 5 an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- a halogen atom, and
- 10 -S(O)_n-R (where n is 0, 1 or 2, and R is a C₁ to C₄ alkyl group that may be branched);
- or may be substituted with -O-(CH₂)_m-O- (where m is 1 or 2) at positions 3 and 4 taken together; and
- (xv) a heteroaryl group, wherein the heteroaryl group may be
- 15 substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 - 20 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - a cyano group,
 - 25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom;
 R⁷ and R⁸ are groups independently selected from the group consisting
 of:
 (i) a hydrogen atom;
 10 (ii) a C₁ to C₁₂ alkyl group that may be branched or form a cyclic
 group;
 (iii) a C₂ to C₁₂ alkenyl group that may be branched or form a
 cyclic group;
 (iv) a C₂ to C₁₂ alkynyl group that may be branched or form a
 15 cyclic group;
 (v) an aryl group, wherein the aryl group may be substituted with
 at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 20 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 25 C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen

- atom or a C₁ to C₄ alkyl group),
- a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - 5 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 - a halogen atom;
 - (vi) a heteroaryl group, wherein the heteroaryl group may be
 - 10 substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 - 15 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - a cyano group,
 - 20 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - 25 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

(vii) $-(\text{CH}_2)_n\text{OCONR}^{10}\text{R}^{11}$ (where R^{10} and R^{11} are groups independently selected from the group consisting of:

(1) a hydrogen atom;

5 (2) a C_1 to C_4 alkyl group that may be branched;

(3) a C_2 to C_6 alkenyl group that may be branched or form a cyclic group ;

(4) a C_2 to C_6 alkynyl group that may be branched or form a cyclic group ;

10 (5) an aralkyl group, wherein the aryl moiety of the aralkyl group may be substituted with at least one group selected from the group consisting of:

a C_1 to C_4 alkyl group that may be branched,

a C_1 to C_5 alkoxy group that may be branched,

15 an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group, an $\text{N,N-di}(\text{C}_1$ to C_4 alkyl)carbamoyl group, or $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),

a cyano group,

$-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),

a nitro group,

25 a carbamoyl group,

an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group,

an $\text{N,N-di}(\text{C}_1$ to C_4 alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

(6) a heteroaralkyl group having a heteroaryl moiety,

5 wherein the heteroaryl moiety may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄

10 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

15 a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

20 an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

25 (7) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 5 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 10 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 15 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
 and
 (8) a heteroaryl group, wherein the heteroaryl group may
 20 be substituted with at least one group selected from the group consisting
 of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 25 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl

group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

5 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

10 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

and n is an integer from 1 to 12);

(viii) -(CH₂)_nCONR¹²R¹³ (where R¹² and R¹³ are groups
15 independently selected from the group consisting of:

(1) a hydrogen atom;

(2) a C₁ to C₄ alkyl group that may be branched;

(3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

20 a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
25

- a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- 5 a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- 10 a halogen atom; and
- (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - 15 a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 20 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - 25 a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,

- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
- 5 and n is an integer from 1 to 12);
- (ix) -(CH₂)_nNR¹²COR¹³ (where R¹² and R¹³ are groups
 independently selected from the group consisting of:
- (1) a hydrogen atom;
- (2) a C₁ to C₄ alkyl group that may be branched;
- 10 (3) an aryl group, wherein the aryl group may be
 substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 15 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
- 20 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
- 25 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be

branched), and

a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting

5 of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

15 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

20 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

and n is an integer from 1 to 12);

25 (x) -(CH₂)_nNR¹²R¹³ (where R¹² and R¹³ are groups independently selected from the group consisting of:

(1) a hydrogen atom;

- (2) a C₁ to C₄ alkyl group that may be branched;
- (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
 - 5 a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 10 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - 15 a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 - 20 branched), and
 - a halogen atom; and
- (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
- 25 a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄

alkyl group that may be branched, a cyano group, $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N-(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group, an $\text{N,N-di(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group, or -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched),

5 a cyano group,
 $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),
a nitro group,
10 a carbamoyl group,
an $\text{N-(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group,
an $\text{N,N-di(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group,
 -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched), and
15 a halogen atom;
and n is an integer from 1 to 12);
(xi) $\text{-(CH}_2\text{)}_n\text{Y-OR}^{12}$ (where Y is a C_1 to C_4 divalent saturated hydrocarbon group that may be branched, and R^{12} is a group selected from the group consisting of:
20 (1) a hydrogen atom;
(2) a C_1 to C_4 alkyl group that may be branched;
(3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
a C_1 to C_4 alkyl group that may be branched,
25 a C_1 to C_5 alkoxy group that may be branched,
an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $\text{-NR}^{20}\text{R}^{21}$ (where R^{20}

and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

5 a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

10 an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

15 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

20 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

25 is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a

- hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - 5 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 - a halogen atom;
- and n is an integer from 1 to 12);
- 10 (xii) -(CH₂)_n-OR¹² (where R¹² is a group selected from the group consisting of:
- (1) a hydrogen atom;
 - (2) a C₁ to C₄ alkyl group that may be branched;
 - (3) an aryl group, wherein the aryl group may be
- 15 substituted with at least one group selected from the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 - 20 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - a cyano group,
 - 25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom; and
 (4) a heteroaryl group, wherein the heteroaryl group may
 be substituted with at least one group selected from the group consisting
 of:
 10 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 15 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 20 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 25 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;

and n is an integer from 1 to 12);

(xiii) $-(\text{CH}_2)_n\text{-S}\cdot\text{R}^{12}$ (where R^{12} is a group selected from the group consisting of:

- (1) a hydrogen atom;
- 5 (2) a C_1 to C_4 alkyl group that may be branched;
- (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
 - a C_1 to C_4 alkyl group that may be branched,
 - a C_1 to C_5 alkoxy group that may be branched,
 - 10 an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N}\cdot(\text{C}_1$ to C_4 alkyl)carbamoyl group, an $\text{N},\text{N}\cdot\text{di}(\text{C}_1$ to C_4 alkyl)carbamoyl group, or $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),
 - 15 a cyano group,
 - $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),
 - a nitro group,
 - 20 a carbamoyl group,
 - an $\text{N}\cdot(\text{C}_1$ to C_4 alkyl)carbamoyl group,
 - an $\text{N},\text{N}\cdot\text{di}(\text{C}_1$ to C_4 alkyl)carbamoyl group,
 - $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched), and
 - 25 a halogen atom; and
 - (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting

of:

- a C₁ to C₄ alkyl group that may be branched,
- a C₁ to C₅ alkoxy group that may be branched,
- an aryl group that may be substituted with a C₁ to C₄
- 5 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- 10 a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- a carbamoyl group,
- 15 an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- a halogen atom;
- 20 and n is an integer from 1 to 12);
- (xiv) -(CH₂)_n-SO-R¹² (where R¹² is a group selected from the group consisting of:
 - (1) a hydrogen atom;
 - (2) a C₁ to C₄ alkyl group that may be branched;
 - 25 (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 5 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 10 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 15 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom; and
 (4) a heteroaryl group, wherein the heteroaryl group may
 be substituted with at least one group selected from the group consisting
 20 of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 25 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹

is a C₁ to C₄ alkyl group that may be branched),
a cyano group,
-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
hydrogen atom or a C₁ to C₄ alkyl group),
5 a nitro group,
a carbamoyl group,
an N-(C₁ to C₄ alkyl)carbamoyl group,
an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
10 branched), and
a halogen atom;
and n is an integer from 1 to 12); and
(xv) -(CH₂)_n-SO₂-R¹² (where R¹² is a group selected from the group
consisting of:
15 (1) a hydrogen atom;
(2) a C₁ to C₄ alkyl group that may be branched;
(3) an aryl group, wherein the aryl group may be
substituted with at least one group selected from the group consisting of:
a C₁ to C₄ alkyl group that may be branched,
20 a C₁ to C₅ alkoxy group that may be branched,
an aryl group that may be substituted with a C₁ to C₄
alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
25 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
is a C₁ to C₄ alkyl group that may be branched),
a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

5 an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

10 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

15 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

25 a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

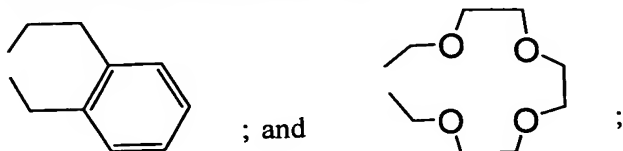
an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

and n is an integer from 1 to 12); or R⁷ and R⁸ are taken together to form

5 a divalent group selected from the group consisting of: -(CH₂)_m- (where m is an integer from 2 to 8);



10 X⁻ is an anion selected from the group consisting of a halide anion, SCN⁻, HSO₄⁻ and HF₂⁻.

2. The compound of claim 1, wherein R¹, R^{1'}, R², R^{2'}, R³, R^{3'}, R⁴, R^{4'}, R⁵, R^{5'}, R⁶, and R^{6'} of the compound represented by the formula (I) are

15 groups independently selected from the group consisting of:

(i) a hydrogen atom;

(xiv) an aryl group, wherein the aryl group may be substituted

with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

20 a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰

and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl

25 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

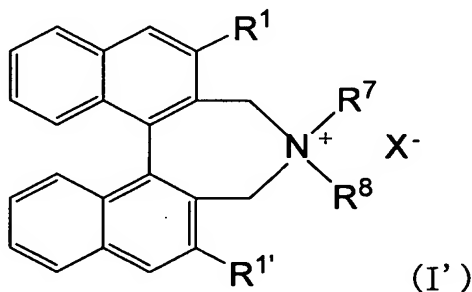
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,
 - a carbamoyl group,
 - 5 an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - a halogen atom, and
 - 10 -S(O)_n-R (where n is 0, 1 or 2, and R is a C₁ to C₄ alkyl group that may be branched);
- or may be substituted with -O-(CH₂)_m-O- (where m is 1 or 2) at positions 3 and 4 taken together; and
- (xv) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - a cyano group,
 - 25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom.

3. The compound of claim 2, wherein R¹, R^{1'}, R², R^{2'}, R³, R^{3'}, R⁴, R^{4'}, R⁵,
 R^{5'}, R⁶, and R^{6'} of the compound represented by the formula (I) are
 10 groups independently selected from the group consisting of a hydrogen
 atom, a 3,4,5-trifluorophenyl group, a 3,4,5-trichlorophenyl group, a
 3,4-difluorophenyl group, a 3-nitrophenyl group, a 3-cyanophenyl group,
 a benzothiophenyl-2-yl group, a 3,5-difluorophenyl group, a
 3-trifluoromethylphenyl group, a 2,4-difluorophenyl group, a
 15 3-methylsulfonylphenyl group, and a 2,3-bis(trifluoromethyl)phenyl
 group.

4. The compound of claim 3, wherein the compound represented by the
 formula (I) is a compound represented by the following formula (I'):

20



25 (where R¹ and R^{1'} are groups independently selected from the group
 consisting of a hydrogen atom, a 3,4,5-trifluorophenyl group, a
 3,4,5-trichlorophenyl group, a 3,4-difluorophenyl group, a 3-nitrophenyl

group, a 3-cyanophenyl group, a benzothiophenyl-2-yl group, a 3,5-difluorophenyl group, a 3-trifluoromethylphenyl group, a 2,4-difluorophenyl group, a 3-methylsulfonylphenyl group, and a 2,3-bis(trifluoromethyl)phenyl group, and R⁷, R⁸ and X are groups
5 independently as defined in claim 1).

5. The compound of claim 1, wherein R⁷ and R⁸ of the compound represented by the formula (I) are groups independently selected from the group consisting of:

10 (ii) a C₁ to C₁₂ alkyl group that may be branched or form a cyclic group; and

(xii) -(CH₂)_n-OR¹² (where R¹² is a group selected from the group consisting of:

- (1) a hydrogen atom,
- 15 (2) a C₁ to C₄ alkyl group that may be branched,
- (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - 20 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
25 is a C₁ to C₄ alkyl group that may be branched),
 - a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a

hydrogen atom or a C₁ to C₄ alkyl group),

- a nitro group,
- a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- 5 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- a halogen atom, and
- (4) a heteroaryl group, wherein the heteroaryl group may
- 10 be substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,
- a C₁ to C₅ alkoxy group that may be branched,
- an aryl group that may be substituted with a C₁ to C₄
- 15 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- 20 a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- a carbamoyl group,
- 25 an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be

branched), and

a halogen atom,

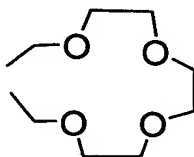
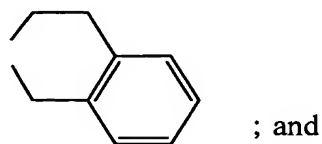
and n is an integer of 1 to 12).

5 6. The compound of claim 5, wherein R^7 and R^8 of the compound represented by the formula (I) are groups independently selected from the group consisting of a methyl group, an ethyl group, an n-butyl group, an isobutyl group, an n-decyl group, and a cyclohexyl group.

10 7. The compound of claim 6, wherein R^7 and R^8 of the compound represented by the formula (I) are the same.

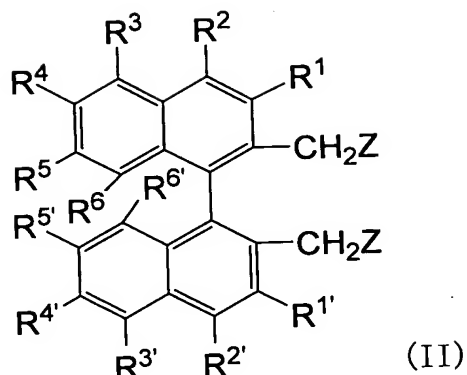
8. The compound of claim 1, wherein R^7 and R^8 of the compound represented by the formula (I) are taken together to form a divalent group selected from the group consisting of: $-(CH_2)_m-$ (where m is an integer from 2 to 8);

20

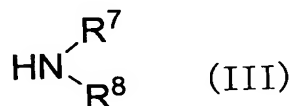


9. A method for producing the compound represented by the formula (I) of claim 1, comprising:

a step of reacting a compound represented by the following
25 formula (II):



with a secondary amine represented by the following formula (III):



in an organic solvent in the presence of an acid scavenging agent,

wherein in the formula (II), R^1 , $R^{1'}$, R^2 , $R^{2'}$, R^3 , $R^{3'}$, R^4 , $R^{4'}$, R^5 , $R^{5'}$, R^6 , and $R^{6'}$ are groups independently selected from the group consisting of:

- (i) a hydrogen atom;
- (ii) $-NR^{20}R^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group);
- (iii) a cyano group;
- (iv) a nitro group;
- (v) a carbamoyl group;
- (vi) an N -(C_1 to C_4 alkyl)carbamoyl group;
- (vii) an N,N -di(C_1 to C_4 alkyl)carbamoyl group;
- (viii) $-NHCOR^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched);
- (ix) a C_1 to C_6 alkyl group that may be branched or form a cyclic group;
- (x) a C_2 to C_6 alkenyl group that may be branched or form a cyclic

group;

(xi) a C₂ to C₆ alkynyl group that may be branched or form a cyclic group;

(xii) an aralkyl group, wherein the aryl moiety of the aralkyl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

(xiii) a heteroaralkyl group having a heteroaryl moiety, wherein the heteroaryl moiety may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 5 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 C₄ alkyl group that may be branched),
 a cyano group,
 10 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 15 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
 (xiv) an aryl group, wherein the aryl group may be substituted
 20 with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 25 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to

C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 5 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 10 branched),
 a halogen atom, and
 -S(O)_n-R (where n is 0, 1 or 2, and R is a C₁ to C₄ alkyl group that
 may be branched);
 or may be substituted with -O-(CH₂)_m-O- (where m is 1 or 2) at positions
 15 3 and 4 taken together; and
 (xv) a heteroaryl group, wherein the heteroaryl group may be
 substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 20 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 25 C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen

atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 5 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom; and
 Z is a halogen atom, and
 10 in the formula (III), R⁷ and R⁸ are groups independently selected
 from the group consisting of:
 (i) a hydrogen atom;
 (ii) a C₁ to C₁₂ alkyl group that may be branched or form a cyclic
 group;
 15 (iii) a C₂ to C₁₂ alkenyl group that may be branched or form a
 cyclic group;
 (iv) a C₂ to C₁₂ alkynyl group that may be branched or form a
 cyclic group;
 (v) an aryl group, wherein the aryl group may be substituted with
 20 at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 25 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to

C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 5 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 10 branched), and
 a halogen atom;
 (vi) a heteroaryl group, wherein the heteroaryl group may be
 substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 15 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 20 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 25 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,

- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 a halogen atom;
- 5 (vii) -(CH₂)_nOCONR¹⁰R¹¹ (where R¹⁰ and R¹¹ are each independently a group selected from the group consisting of:
- (1) a hydrogen atom;
 - (2) a C₁ to C₄ alkyl group that may be branched;
 - (3) a C₂ to C₆ alkenyl group that may be branched or form
 - 10 a cyclic group ;
 - (4) a C₂ to C₆ alkynyl group that may be branched or form a cyclic group ;
 - (5) an aralkyl group, wherein the aryl moiety of the aralkyl group may be substituted with at least one group selected from
 - 15 the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 - 20 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - a cyano group,
 - 25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom;
 (6) a heteroaralkyl group having a heteroaryl moiety,
 wherein the heteroaryl moiety may be substituted with at least one
 group selected from the group consisting of:
 10 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 15 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 20 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 25 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;

(7) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

5 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

15 a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

20 a halogen atom;

and

(8) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

25 a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄

alkyl group that may be branched, a cyano group, $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N-(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group, an $\text{N,N-di(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group, or -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched),

5 a cyano group,
 $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),
a nitro group,
10 a carbamoyl group,
an $\text{N-(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group,
an $\text{N,N-di(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group,
 -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched), and

15 a halogen atom;
and n is an integer from 1 to 12);

(viii) $\text{-(CH}_2\text{)}_n\text{CONR}^{12}\text{R}^{13}$ (where R^{12} and R^{13} are groups independently selected from the group consisting of:

(1) a hydrogen atom;

20 (2) a C_1 to C_4 alkyl group that may be branched;

(3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C_1 to C_4 alkyl group that may be branched,
a C_1 to C_5 alkoxy group that may be branched,

25 an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl

group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

5 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

10 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may
15 be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄
20 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

25 a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 5 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
 and n is an integer from 1 to 12);
 (ix) -(CH₂)_nNR¹²COR¹³ (where R¹² and R¹³ are groups
 10 independently selected from the group consisting of:
 (1) a hydrogen atom;
 (2) a C₁ to C₄ alkyl group that may be branched;
 (3) an aryl group, wherein the aryl group may be
 substituted with at least one group selected from the group consisting of:
 15 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 20 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 25 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 5 a halogen atom; and
 (4) a heteroaryl group, wherein the heteroaryl group may
 be substituted with at least one group selected from the group consisting
 of:
 a C₁ to C₄ alkyl group that may be branched,
 10 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 15 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 hydrogen atom or a C₁ to C₄ alkyl group),
 20 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 25 branched), and
 a halogen atom;
 and n is an integer from 1 to 12);

(x) $-(\text{CH}_2)_n\text{NR}^{12}\text{R}^{13}$ (where R^{12} and R^{13} are groups independently selected from the group consisting of:

- (1) a hydrogen atom;
- (2) a C_1 to C_4 alkyl group that may be branched;
- 5 (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
 - a C_1 to C_4 alkyl group that may be branched,
 - a C_1 to C_5 alkoxy group that may be branched,
 - an aryl group that may be substituted with a C_1 to C_4
 - 10 alkyl group that may be branched, a cyano group, $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group, an N,N -di(C_1 to C_4 alkyl)carbamoyl group, or $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),
 - 15 a cyano group,
 - $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),
 - a nitro group,
 - a carbamoyl group,
 - 20 an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group,
 - an N,N -di(C_1 to C_4 alkyl)carbamoyl group,
 - $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched), and
 - a halogen atom; and
 - 25 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 5 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 10 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 15 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
 and n is an integer from 1 to 12);
 20 (xi) -(CH₂)_nY-OR¹² (where Y is a C₁ to C₄ divalent saturated
 hydrocarbon group that may be branched, and R¹² is a group selected
 from the group consisting of:
 (1) a hydrogen atom;
 (2) a C₁ to C₄ alkyl group that may be branched;
 25 (3) an aryl group, wherein the aryl group may be
 substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 5 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 10 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 15 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom; and
 (4) a heteroaryl group, wherein the heteroaryl group may
 be substituted with at least one group selected from the group consisting
 20 of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 25 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹

is a C₁ to C₄ alkyl group that may be branched),
a cyano group,
-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
hydrogen atom or a C₁ to C₄ alkyl group),
5 a nitro group,
a carbamoyl group,
an N-(C₁ to C₄ alkyl)carbamoyl group,
an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
10 branched), and
a halogen atom;
and n is an integer from 1 to 12);
(xii) -(CH₂)_n-OR¹² (where R¹² is a group selected from the group
consisting of:
15 (1) a hydrogen atom;
(2) a C₁ to C₄ alkyl group that may be branched;
(3) an aryl group, wherein the aryl group may be
substituted with at least one group selected from the group consisting of:
a C₁ to C₄ alkyl group that may be branched,
20 a C₁ to C₅ alkoxy group that may be branched,
an aryl group that may be substituted with a C₁ to C₄
alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
25 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
is a C₁ to C₄ alkyl group that may be branched),
a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

5 an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

10 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

15 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

25 a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

and n is an integer from 1 to 12);

5 (xiii) -(CH₂)_n-S-R¹² (where R¹² is a group selected from the group consisting of:

(1) a hydrogen atom;

(2) a C₁ to C₄ alkyl group that may be branched;

(3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

20 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

25 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

- a halogen atom; and
- (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
- 5 a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 10 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - 15 a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - 20 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 - a halogen atom;
- and n is an integer from 1 to 12);
- (xiv) -(CH₂)_n-SO-R¹² (where R¹² is a group selected from the group consisting of:
- 25 (1) a hydrogen atom;
 - (2) a C₁ to C₄ alkyl group that may be branched;

(3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,
- a C₁ to C₅ alkoxy group that may be branched,
- 5 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- 10 a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- 15 a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- 20 a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,
- 25 a C₁ to C₅ alkoxy group that may be branched,
- an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰

and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an N -(C_1 to C_4 alkyl)carbamoyl group, an N,N -di(C_1 to C_4 alkyl)carbamoyl group, or -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched),

5 a cyano group,

$\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),

a nitro group,

a carbamoyl group,

10 an N -(C_1 to C_4 alkyl)carbamoyl group,

an N,N -di(C_1 to C_4 alkyl)carbamoyl group,

-NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched), and

a halogen atom;

15 and n is an integer from 1 to 12); and

(xv) $\text{-(CH}_2\text{)}_n\text{-SO}_2\text{-R}^{12}$ (where R^{12} is a group selected from the group consisting of:

(1) a hydrogen atom;

(2) a C_1 to C_4 alkyl group that may be branched;

20 (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C_1 to C_4 alkyl group that may be branched,

a C_1 to C_5 alkoxy group that may be branched,

25 an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an N -(C_1 to C_4 alkyl)carbamoyl

group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

5 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

10 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting
15 of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
20 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

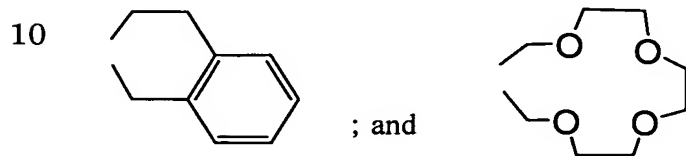
a cyano group,

25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom;

and n is an integer from 1 to 12); or R⁷ and R⁸ are taken together to form
 a divalent group selected from the group consisting of: -(CH₂)_m- (where m
 is an integer from 2 to 8);



10. The method of claim 9, wherein R¹, R^{1'}, R², R^{2'}, R³, R^{3'}, R⁴, R^{4'}, R⁵,
 15 R^{5'}, R⁶, and R^{6'} of the compound represented by the formula (II) are
 groups independently selected from the group consisting of:

(i) a hydrogen atom;

(xiv) an aryl group, wherein the aryl group may be substituted
 with at least one group selected from the group consisting of:

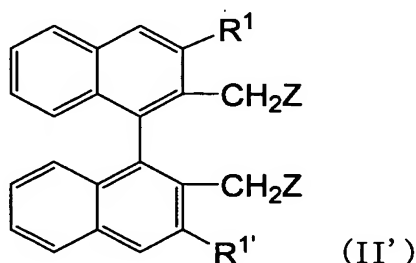
20 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 25 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),

- a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- 5 a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- 10 a halogen atom, and
- S(O)_n-R (where n is 0, 1 or 2, and R is a C₁ to C₄ alkyl group that may be branched);
- or may be substituted with -O-(CH₂)_m-O- (where m is 1 or 2) at positions 3 and 4 taken together; and
- 15 (xv) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄
 - 20 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 25 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 5 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom.

11. The method of claim 10, wherein R¹, R^{1'}, R², R^{2'}, R³, R^{3'}, R⁴, R^{4'}, R⁵,
 10 R^{5'}, R⁶, and R^{6'} of the compound represented by the formula (II) are
 groups independently selected from the group consisting of a hydrogen
 atom, a 3,4,5-trifluorophenyl group, a 3,4,5-trichlorophenyl group, a
 3,4-difluorophenyl group, a 3-nitrophenyl group, a 3-cyanophenyl group,
 a benzothiophenyl-2-yl group, a 3,5-difluorophenyl group, a
 15 3-trifluoromethylphenyl group, a 2,4-difluorophenyl group, a
 3-methylsulfonylphenyl group, and a 2,3-bis(trifluoromethyl)phenyl
 group.

12. The method of claim 11, wherein the compound represented by the
 20 formula (II) is a compound represented by the following formula (II'):



25 (where R¹ and R^{1'} are groups independently selected from the group
 consisting of a hydrogen atom, a 3,4,5-trifluorophenyl group, a

3,4,5-trichlorophenyl group, a 3,4-difluorophenyl group, a 3-nitrophenyl group, a 3-cyanophenyl group, a benzothiophenyl-2-yl group, a 3,5-difluorophenyl group, a 3-trifluoromethylphenyl group, a 2,4-difluorophenyl group, a 3-methylsulfonylphenyl group, and a
5 2,3-bis(trifluoromethyl)phenyl group, and R⁷, R⁸ and Z are groups independently as defined in claim 9).

13. The method of claim 9, wherein R⁷ and R⁸ of the secondary amine represented by the formula (II) are groups independently selected from
10 the group consisting of:

(ii) a C₁ to C₁₂ alkyl group that may be branched or form a cyclic group; and

(xii) -(CH₂)_n-OR¹² (where R¹² is a group selected from the group consisting of:

15 (1) a hydrogen atom,

(2) a C₁ to C₄ alkyl group that may be branched,

(3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

20 a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
25 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- a carbamoyl group,
- 5 an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- a halogen atom, and
- 10 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - 15 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 20 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,
 - 25 a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom,

and n is an integer of 1 to 12.

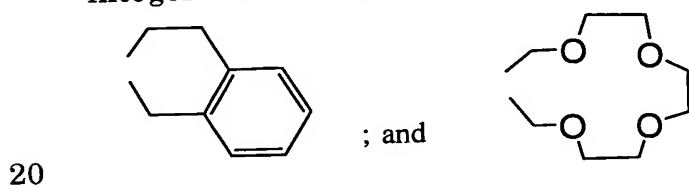
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14. The method of claim 13, wherein R⁷ and R⁸ of the secondary amine represented by the formula (II) are groups independently selected from the group consisting of a methyl group, an ethyl group, an n-butyl group, an isobutyl group, an n-decyl group, and a cyclohexyl group.

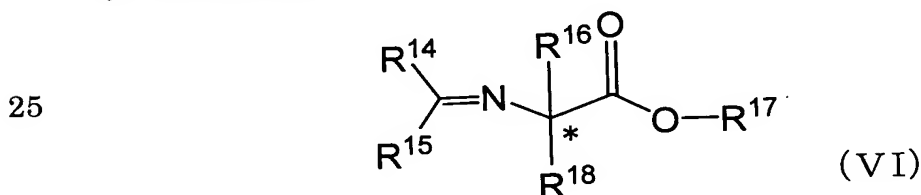
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15. The method of claim 14, wherein R⁷ and R⁸ of the secondary amine represented by the formula (II) are the same.

16. The method of claim 9, wherein R⁷ and R⁸ of the secondary amine represented by the formula (II) are taken together to form a divalent group selected from the group consisting of: -(CH₂)_m- (where m is an integer from 2 to 8);

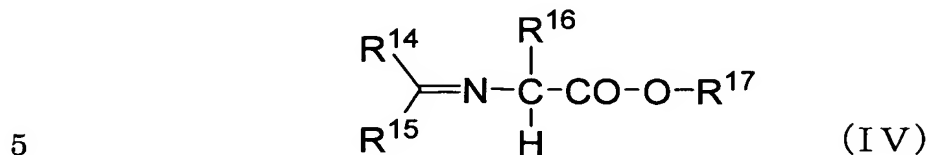


17. A method for stereoselectively producing a compound represented by the formula (VI):



comprising:

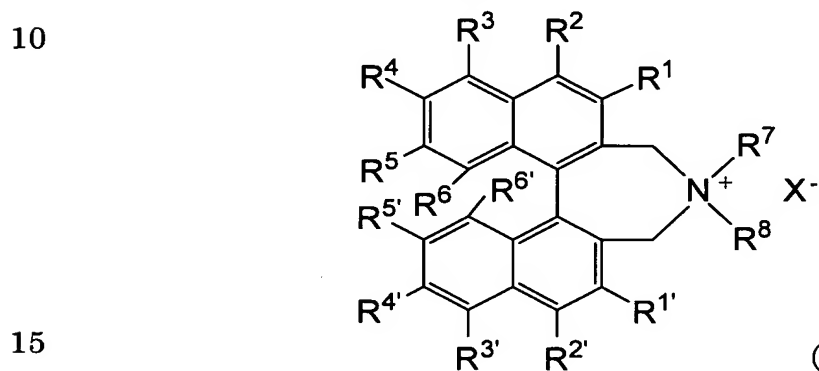
alkylating a compound represented by the formula (IV)



with a compound of the formula (V):



using a compound represented by the formula (I) that is pure with respect to axis symmetry as a phase-transfer catalyst:



in a medium in the presence of an inorganic base,

wherein in the formula (I), R¹, R^{1'}, R², R^{2'}, R³, R^{3'}, R⁴, R^{4'}, R⁵, R^{5'}, R⁶, and R^{6'} are groups independently selected from the group consisting of:

- 20
- (i) a hydrogen atom;
 - (ii) -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group);
 - (iii) a cyano group;
 - (iv) a nitro group;
 - 25 (v) a carbamoyl group;
 - (vi) an N-(C₁ to C₄ alkyl)carbamoyl group;
 - (vii) an N,N-di(C₁ to C₄ alkyl)carbamoyl group;

(viii) -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched);

(ix) a C_1 to C_6 alkyl group that may be branched or form a cyclic group;

5 (x) a C_2 to C_6 alkenyl group that may be branched or form a cyclic group;

(xi) a C_2 to C_6 alkynyl group that may be branched or form a cyclic group;

(xii) an aralkyl group, wherein the aryl moiety of the aralkyl
10 group may be substituted with at least one group selected from the group consisting of:

a C_1 to C_4 alkyl group that may be branched,

a C_1 to C_5 alkoxy group that may be branched,

an aryl group that may be substituted with a C_1 to C_4 alkyl group
15 that may be branched, a cyano group, $\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N-(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group, an $\text{N,N-di(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group, or -NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be branched),

20 a cyano group,

$\text{-NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),

a nitro group,

a carbamoyl group,

25 an $\text{N-(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group,

an $\text{N,N-di(C}_1 \text{ to C}_4 \text{ alkyl)carbamoyl}$ group,

-NHCOR^9 (where R^9 is a C_1 to C_4 alkyl group that may be

branched), and

a halogen atom;

(xiii) a heteroaralkyl group having a heteroaryl moiety, wherein the heteroaryl moiety may be substituted with at least one group
5 selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
10 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

15 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

20 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

(xiv) an aryl group, wherein the aryl group may be substituted
25 with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 5 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 10 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 15 branched),
 a halogen atom, and
 -S(O)_n-R (where n is 0, 1 or 2, and R is a C₁ to C₄ alkyl group that
 may be branched);
 or may be substituted with -O-(CH₂)_m-O- (where m is 1 or 2) at positions
 20 3 and 4 taken together; and
 (xv) a heteroaryl group, wherein the heteroaryl group may be
 substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 25 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro

group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

5 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

10 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

R⁷ and R⁸ are each independently a monovalent organic group or are
15 taken together to form a divalent organic group,

X⁻ is a halide anion,

in the formulae (IV) and (VI),

R¹⁴ and R¹⁵ are each independently

(i) a hydrogen atom; or

20 (ii) an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a C₁ to C₅ alkoxy group that may be branched, or a halogen atom;

with the proviso the case where both R¹⁴ and R¹⁵ are hydrogen atoms is excluded,

25 R¹⁶ is a group selected from the group consisting of:

(i) a hydrogen atom;

(ii) a C₁ to C₁₀ alkyl group that may be branched or form a cyclic

group;

(iii) a C₂ to C₆ alkenyl group that may be branched or form a cyclic group;

(iv) a C₂ to C₆ alkynyl group that may be branched or form a
5 cyclic group;

(v) an aralkyl group, wherein the aryl group of the aralkyl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

10 a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
15 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

20 a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
25 branched), and

a halogen atom;

(vi) a heteroaralkyl group having a heteroaryl moiety, wherein

the heteroaryl moiety may be substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,
- a C₁ to C₅ alkoxy group that may be branched,
- 5 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
- 10 C₄ alkyl group that may be branched),
 - a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,
 - 15 a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- 20 a halogen atom;
- (vii) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - 25 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro

group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

5 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

10 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

(viii) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom;
 R¹⁷ is a C₁ to C₈ alkyl group that may be branched or form a cyclic
 group),
 in the formulae (V) and (VI),
 10 R¹⁸ is a group selected from the group consisting of:
 (i) a C₁ to C₁₀ alkyl group that may be branched or form a cyclic
 group;
 (ii) a C₃ to C₉ allyl group or substituted allyl group that may be
 branched or form a cyclic group;
 15 (iii) a C₂ to C₆ alkenyl group that may be branched or form a
 cyclic group;
 (iv) a C₂ to C₆ alkynyl group that may be branched or form a
 cyclic group;
 (v) an aralkyl group, wherein the aryl moiety of the aralkyl group
 20 may be substituted with at least one group selected from the group
 consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 25 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an

N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 5 atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 10 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
 (vi) a heteroaralkyl group having a heteroaryl moiety, wherein
 the heteroaryl moiety may be substituted with at least one group
 15 selected from the group
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 20 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 C₄ alkyl group that may be branched),
 a cyano group,
 25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 a nitro group,

a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 5 branched), and
 a halogen atom;
 (vii) an aryl group, wherein the aryl group may be substituted
 with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 10 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group
 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are
 each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro
 group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
 15 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to
 C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen
 atom or a C₁ to C₄ alkyl group),
 20 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 25 branched), and
 a halogen atom;
 (viii) a heteroaryl group, wherein the heteroaryl group may be

substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group

5 that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

10 a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

15 an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

20 (ix) a C₃ to C₉ propargyl group or substituted propargyl group that may be branched, and

in the formula (V),

W is a functional group having a leaving ability, and

in the formula (VI),

25 * shows a newly produced asymmetric center.

18. The method of claim 17, wherein R⁷ and R⁸ of the compound

represented by the formula (I) are groups independently selected from the group consisting of:

(i) a C₁ to C₁₂ alkyl group that may be branched or form a cyclic group and/or may be substituted with a halogen atom;

5 (ii) a C₂ to C₁₂ alkenyl group that may be branched or form a cyclic group and/or may be substituted with a halogen atom;

(iii) a C₂ to C₁₂ alkynyl group that may be branched or form a cyclic group and/or may be substituted with a halogen atom;

10 (iv) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

15 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

20 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

25 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

(v) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

5 a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an
10 N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

15 a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
20 branched), and

a halogen atom;

(vi) -(CH₂)_nOCONR¹⁰R¹¹ (where R¹⁰ and R¹¹ are groups independently selected from the group consisting of:

(1) a hydrogen atom;

25 (2) a C₁ to C₄ alkyl group that may be branched;

(3) a C₂ to C₆ alkenyl group that may be branched or form a cyclic group ;

(4) a C₂ to C₆ alkynyl group that may be branched or form a cyclic group ;

(5) an aralkyl group, wherein the aryl moiety of the aralkyl group may be substituted with at least one group selected from
5 the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
10 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

15 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

20 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

(6) a heteroaralkyl group having a heteroaryl moiety,
25 wherein the heteroaryl moiety may be substituted with at least one group selected from the group consisting of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 5 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 10 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 15 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
 (7) an aryl group, wherein the aryl group may be
 substituted with at least one group selected from the group consisting of:
 20 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 25 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),

- a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- 5 a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- 10 a halogen atom; and
- (8) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - 15 a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 20 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - 25 a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,

- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 a halogen atom;
- 5 and n is an integer from 1 to 12);
- (vii) -(CH₂)_nCONR¹²R¹³ (where R¹² and R¹³ are groups
 independently selected from the group consisting of:
- (1) a hydrogen atom;
- (2) a C₁ to C₄ alkyl group that may be branched;
- 10 (3) an aryl group, wherein the aryl group may be
 substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 15 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
- 20 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
- 25 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be

branched), and

a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting

5 of: a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

15 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

20 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom;

and n is an integer from 1 to 12);

(viii) -(CH₂)_nNR¹²COR¹³ (where R¹² and R¹³ are groups independently selected from the group consisting of:

(1) a hydrogen atom;

(2) a C₁ to C₄ alkyl group that may be branched;

- (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - 5 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 10 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,
 - 15 a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 - 20 a halogen atom; and
- (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
 - 25 a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰

and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an N -(C_1 to C_4 alkyl)carbamoyl group, an N,N -di(C_1 to C_4 alkyl)carbamoyl group, or $\cdot NHCOR^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),

5 a cyano group,

$\cdot NR^{20}R^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),

a nitro group,

a carbamoyl group,

10 an N -(C_1 to C_4 alkyl)carbamoyl group,

an N,N -di(C_1 to C_4 alkyl)carbamoyl group,

$\cdot NHCOR^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched), and

a halogen atom;

15 and n is an integer from 1 to 12);

(ix) $\cdot (CH_2)_n NR^{12}R^{13}$ (where R^{12} and R^{13} are groups independently selected from the group consisting of:

(1) a hydrogen atom;

(2) a C_1 to C_4 alkyl group that may be branched;

20 (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C_1 to C_4 alkyl group that may be branched,

a C_1 to C_5 alkoxy group that may be branched,

25 an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $\cdot NR^{20}R^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an N -(C_1 to C_4 alkyl)carbamoyl

group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

5 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,

an N,N-di(C₁ to C₄ alkyl)carbamoyl group,

10 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting
15 of:

a C₁ to C₄ alkyl group that may be branched,

a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
20 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

a cyano group,

25 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

a nitro group,

a carbamoyl group,
an N-(C₁ to C₄ alkyl)carbamoyl group,
an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
5 branched), and

a halogen atom;
and n is an integer from 1 to 12);

(x) -(CH₂)_nY-OR¹² (where Y is a C₁ to C₄ divalent saturated
hydrocarbon group that may be branched, and R¹² is a group selected
10 from the group consisting of:

(1) a hydrogen atom;
(2) a C₁ to C₄ alkyl group that may be branched;
(3) an aryl group, wherein the aryl group may be
substituted with at least one group selected from the group consisting of:
15 a C₁ to C₄ alkyl group that may be branched,
a C₁ to C₅ alkoxy group that may be branched,
an aryl group that may be substituted with a C₁ to C₄
alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
20 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
is a C₁ to C₄ alkyl group that may be branched),

a cyano group,
-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
25 hydrogen atom or a C₁ to C₄ alkyl group),
a nitro group,
a carbamoyl group,

an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 branched), and
 5 a halogen atom; and
 (4) a heteroaryl group, wherein the heteroaryl group may
 be substituted with at least one group selected from the group consisting
 of:
 a C₁ to C₄ alkyl group that may be branched,
 10 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄
 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
 group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
 15 group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
 is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
 hydrogen atom or a C₁ to C₄ alkyl group),
 20 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
 25 branched), and
 a halogen atom;
 and n is an integer from 1 to 12);

(xi) $-(\text{CH}_2)_n\text{-OR}^{12}$ (where R^{12} is a group selected from the group consisting of:

- (1) a hydrogen atom;
- (2) a C_1 to C_4 alkyl group that may be branched;
- 5 (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
 - a C_1 to C_4 alkyl group that may be branched,
 - a C_1 to C_5 alkoxy group that may be branched,
 - an aryl group that may be substituted with a C_1 to C_4
 - 10 alkyl group that may be branched, a cyano group, $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group, an $\text{N,N-di}(\text{C}_1$ to C_4 alkyl)carbamoyl group, or $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),
 - 15 a cyano group,
 - $-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),
 - a nitro group,
 - a carbamoyl group,
 - 20 an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group,
 - an $\text{N,N-di}(\text{C}_1$ to C_4 alkyl)carbamoyl group,
 - $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched), and
 - a halogen atom; and
 - 25 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,
a C₁ to C₅ alkoxy group that may be branched,
an aryl group that may be substituted with a C₁ to C₄
alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰
5 and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl
group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl
group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
is a C₁ to C₄ alkyl group that may be branched),
a cyano group,
10 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a
hydrogen atom or a C₁ to C₄ alkyl group),
a nitro group,
a carbamoyl group,
an N-(C₁ to C₄ alkyl)carbamoyl group,
15 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
branched), and
a halogen atom;
and n is an integer from 1 to 12);
20 (xii) -(CH₂)_n-S-R¹² (where R¹² is a group selected from the group
consisting of:
(1) a hydrogen atom;
(2) a C₁ to C₄ alkyl group that may be branched;
(3) an aryl group, wherein the aryl group may be
25 substituted with at least one group selected from the group consisting of:
a C₁ to C₄ alkyl group that may be branched,
a C₁ to C₅ alkoxy group that may be branched,

an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 a halogen atom; and
 (4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:
 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

- a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
- 5 a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
- 10 a halogen atom;
- and n is an integer from 1 to 12);
- (xiii) -(CH₂)_n-SO-R¹² (where R¹² is a group selected from the group consisting of:
- (1) a hydrogen atom;
- 15 (2) a C₁ to C₄ alkyl group that may be branched;
- (3) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:
- a C₁ to C₄ alkyl group that may be branched,
- a C₁ to C₅ alkoxy group that may be branched,
- 20 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹
- 25 is a C₁ to C₄ alkyl group that may be branched),
- a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a

- hydrogen atom or a C₁ to C₄ alkyl group),
- a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
 - 5 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
 - a halogen atom; and
 - (4) a heteroaryl group, wherein the heteroaryl group may
 - 10 be substituted with at least one group selected from the group consisting of:
 - a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄
 - 15 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 - 20 a cyano group,
 - NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
 - a nitro group,
 - a carbamoyl group,
 - 25 an N-(C₁ to C₄ alkyl)carbamoyl group,
 - an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 - NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be

branched), and

a halogen atom;

and n is an integer from 1 to 12); and

(xiv) $-(\text{CH}_2)_n\text{-SO}_2\text{-R}^{12}$ (where R^{12} is a group selected from the
5 group consisting of:

(1) a hydrogen atom;

(2) a C_1 to C_4 alkyl group that may be branched;

(3) an aryl group, wherein the aryl group may be
substituted with at least one group selected from the group consisting of:

10 a C_1 to C_4 alkyl group that may be branched,

a C_1 to C_5 alkoxy group that may be branched,

an aryl group that may be substituted with a C_1 to C_4
alkyl group that may be branched, a cyano group, $-\text{NR}^{20}\text{R}^{21}$ (where R^{20}
and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl
15 group), a nitro group, a carbamoyl group, an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl
group, an $\text{N,N-di}(\text{C}_1$ to C_4 alkyl)carbamoyl group, or $-\text{NHCOR}^9$ (where R^9
is a C_1 to C_4 alkyl group that may be branched),

a cyano group,

$-\text{NR}^{20}\text{R}^{21}$ (where R^{20} and R^{21} are each independently a
20 hydrogen atom or a C_1 to C_4 alkyl group),

a nitro group,

a carbamoyl group,

an $\text{N}-(\text{C}_1$ to C_4 alkyl)carbamoyl group,

an $\text{N,N-di}(\text{C}_1$ to C_4 alkyl)carbamoyl group,

25 $-\text{NHCOR}^9$ (where R^9 is a C_1 to C_4 alkyl group that may be
branched), and

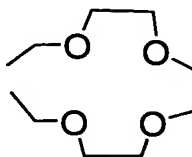
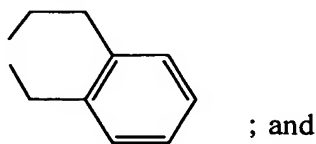
a halogen atom; and

(4) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

- 5 a C₁ to C₄ alkyl group that may be branched,
 a C₁ to C₅ alkoxy group that may be branched,
 an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
 a cyano group,
 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
15 a nitro group,
 a carbamoyl group,
 an N-(C₁ to C₄ alkyl)carbamoyl group,
 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
 -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
20 branched), and
 a halogen atom;

and n is an integer from 1 to 12); or R⁷ and R⁸ are taken together to form a divalent group selected from the group consisting of: -(CH₂)_m (where m is an integer from 2 to 8);

25



19. The method of claim 18, wherein R^1 , $R^{1'}$, R^2 , $R^{2'}$, R^3 , $R^{3'}$, R^4 , $R^{4'}$, R^5 , $R^{5'}$, R^6 , and $R^{6'}$ of the compound represented by the formula (I) are groups independently selected from the group consisting of:

(i) a hydrogen atom;

5 (xiv) an aryl group, wherein the aryl group may be substituted with at least one group selected from the group consisting of:

a C_1 to C_4 alkyl group that may be branched,

a C_1 to C_5 alkoxy group that may be branched,

10 an aryl group that may be substituted with a C_1 to C_4 alkyl group that may be branched, a cyano group, $-NR^{20}R^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group), a nitro group, a carbamoyl group, an N -(C_1 to C_4 alkyl)carbamoyl group, an N,N -di(C_1 to C_4 alkyl)carbamoyl group, or $-NHCOR^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),

15 a cyano group,

$-NR^{20}R^{21}$ (where R^{20} and R^{21} are each independently a hydrogen atom or a C_1 to C_4 alkyl group),

a nitro group,

a carbamoyl group,

20 an N -(C_1 to C_4 alkyl)carbamoyl group,

an N,N -di(C_1 to C_4 alkyl)carbamoyl group,

$-NHCOR^9$ (where R^9 is a C_1 to C_4 alkyl group that may be branched),

a halogen atom, and

25 $-S(O)_n-R$ (where n is 0, 1 or 2, and R is a C_1 to C_4 alkyl group that may be branched);

or may be substituted with $-O-(CH_2)_m-O-$ (where m is 1 or 2) at positions

3 and 4 taken together; and

(xv) a heteroaryl group, wherein the heteroaryl group may be substituted with at least one group selected from the group consisting of:

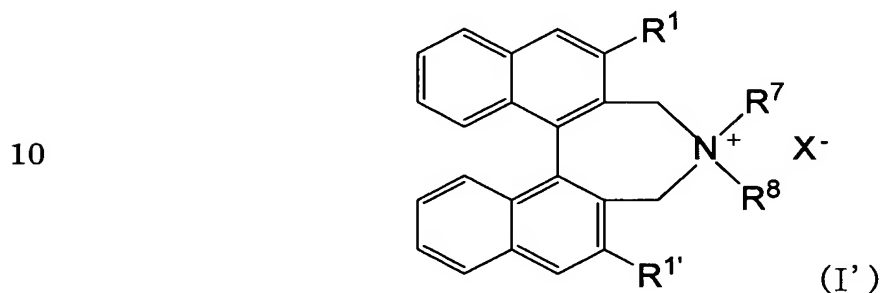
- a C₁ to C₄ alkyl group that may be branched,
- 5 a C₁ to C₅ alkoxy group that may be branched,
- an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
- 10 a cyano group,
- NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
- 15 a nitro group,
- a carbamoyl group,
- an N-(C₁ to C₄ alkyl)carbamoyl group,
- an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be
- 20 branched), and
- a halogen atom.

20. The method of claim 19, wherein R¹, R^{1'}, R², R^{2'}, R³, R^{3'}, R⁴, R^{4'}, R⁵, R^{5'}, R⁶, and R^{6'} of the compound represented by the formula (I) are groups independently selected from the group consisting of a hydrogen atom, a 3,4,5-trifluorophenyl group, a 3,4,5-trichlorophenyl group, a 3,4-difluorophenyl group, a 3-nitrophenyl group, a 3-cyanophenyl group,

a benzothiophenyl-2-yl group, a 3,5-difluorophenyl group, a 3-trifluoromethylphenyl group, a 2,4-difluorophenyl group, a 3-methylsulfonylphenyl group, and a 2,3-bis(trifluoromethyl)phenyl group.

5

21. The method of claim 20, wherein the compound represented by the formula (I) is a compound represented by the following formula (I'):



(where R¹ and R^{1'} are groups independently selected from the group consisting of a hydrogen atom, a 3,4,5-trifluorophenyl group, a 3,4,5-trichlorophenyl group, a 3,4-difluorophenyl group, a 3-nitrophenyl group, a 3-cyanophenyl group, a benzothiophenyl-2-yl group, a 3,5-difluorophenyl group, a 3-trifluoromethylphenyl group, a 2,4-difluorophenyl group, a 3-methylsulfonylphenyl group, and a 2,3-bis(trifluoromethyl)phenyl group, and R⁷, R⁸ and X⁻ are groups independently as defined in claim 17).

15

20

22. The method of claim 17, wherein R⁷ and R⁸ of the compound represented by the formula (I) are groups independently selected from the group consisting of:

25 (ii) a C₁ to C₁₂ alkyl group that may be branched or form a cyclic group; and

(xii) -(CH₂)_n-OR¹² (where R¹² is a group selected from the group

consisting of:

- (1) a hydrogen atom,
 - (2) a C₁ to C₄ alkyl group that may be branched,
 - (3) an aryl group, wherein the aryl group may be
- 5 substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,
 - a C₁ to C₅ alkoxy group that may be branched,
 - an aryl group that may be substituted with a C₁ to C₄
- 10 alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),

- a cyano group,
- 15 -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),

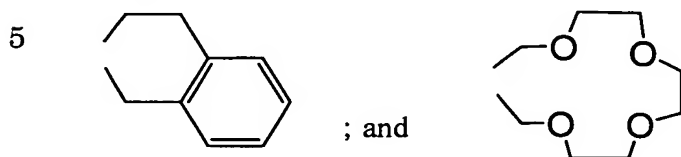
- a nitro group,
 - a carbamoyl group,
 - an N-(C₁ to C₄ alkyl)carbamoyl group,
- 20 an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
- NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and

- a halogen atom, and
- (4) a heteroaryl group, wherein the heteroaryl group may
- 25 be substituted with at least one group selected from the group consisting of:

- a C₁ to C₄ alkyl group that may be branched,

- a C₁ to C₅ alkoxy group that may be branched,
an aryl group that may be substituted with a C₁ to C₄ alkyl group that may be branched, a cyano group, -NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group), a nitro group, a carbamoyl group, an N-(C₁ to C₄ alkyl)carbamoyl group, an N,N-di(C₁ to C₄ alkyl)carbamoyl group, or -NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched),
a cyano group,
-NR²⁰R²¹ (where R²⁰ and R²¹ are each independently a hydrogen atom or a C₁ to C₄ alkyl group),
a nitro group,
a carbamoyl group,
an N-(C₁ to C₄ alkyl)carbamoyl group,
an N,N-di(C₁ to C₄ alkyl)carbamoyl group,
-NHCOR⁹ (where R⁹ is a C₁ to C₄ alkyl group that may be branched), and
a halogen atom,
and n is an integer of 1 to 12.
23. The method of claim 22, wherein R⁷ and R⁸ of the compound represented by the formula (I) are groups independently selected from the group consisting of a methyl group, an ethyl group, an n-butyl group, an isobutyl group, an n-decyl group, and a cyclohexyl group.
24. The method of claim 23, wherein R⁷ and R⁸ of the compound represented by the formula (I) are the same.

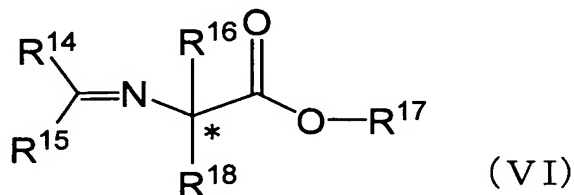
25. The method of claim 17, wherein R^7 and R^8 of the compound represented by the formula (I) are taken together to form a divalent group selected from the group consisting of: $-(CH_2)_m-$ (where m is an integer from 2 to 8);



26. The method of claim 17, wherein the compound represented by the formula (I) is used in a ratio of 0.001 mol % to 0.1 mol % per 1 mol of the compound represented by the formula (IV).

27. The method of claim 17, wherein the compound represented by the formula (I) is used in a ratio of 0.005 mol % to 0.05 mol % per 1 mol of the compound represented by the formula (IV).

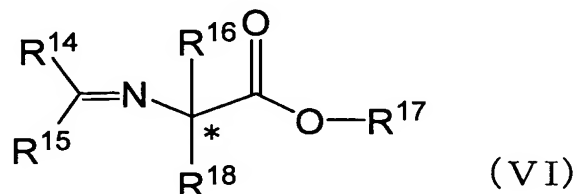
28. A method for producing an optically active α -amino acid, comprising: hydrolyzing an imino group ($R^{14}R^{15}C=N-$) and an ester group ($-CO_2R^{17}$) of the compound represented by the formula (VI) that is obtained by the method of any one of claims 17 to 26, under an acidic condition:



25 (where R^{14} , R^{15} , R^{16} , R^{17} and R^{18} are the same groups as defined above).

29. A method for producing an optically active α -amino acid, comprising:

hydrolyzing an imino group ($R^{14}R^{15}C=N$) of the compound represented by the formula (VI) that is obtained by the method of any
5 one of claims 17 to 26, under an acidic condition:



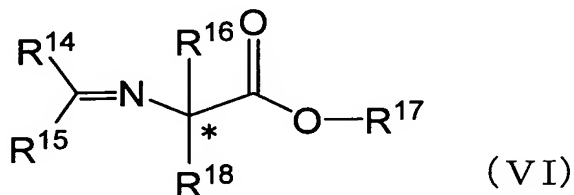
10 (where R^{14} , R^{15} , R^{16} , R^{17} and R^{18} are the same groups as defined above), and

hydrolyzing an ester group ($-CO_2R^{17}$) of the acid hydrolyzed product under an acidic or basic condition.

15 30. A method for producing an optically active α -amino acid, comprising:

hydrolyzing an ester group ($-CO_2R^{17}$) of the compound represented by the formula (VI) that is obtained by the method of any one of claims 17 to 26, under a basic condition:

20



25 (where R^{14} , R^{15} , R^{16} , R^{17} and R^{18} are the same groups as defined above), and

hydrolyzing an imino group ($R^{14}R^{15}C=N$) of the basic hydrolyzed product under an acidic condition.